

Montana Department of Fish, Wildlife & Parks

1400 South 19th Avenue, Bozeman MT, 59718

Environmental Assessment

Introduction of Westslope Cutthroat Trout to Elkhorn Creek, Gallatin River Drainage

PART I. PROPOSED ACTION DESCRIPTION

1. Type of Proposed State Action:

The proposed action is to introduce native westslope cutthroat trout (WCT) into Elkhorn Creek, a fishless stream in the Gallatin River drainage near Big Sky, MT. The project is designed to increase the overall distribution of WCT, a rare native species in the upper Missouri River drainage, and to preserve the genetic legacy of local “at risk” populations.

2. Agency Authority for the Proposed Action

- Montana Fish, Wildlife & Parks (FWP) is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under 87-5-107 or the federal Endangered Species Act. Section 87-1-201(9)(a), M.C.A.
- FWP is a signatory to the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (FWP 1999) which states: “The management goal for WCT in Montana is to ensure the long-term, self sustaining persistence of the subspecies within each of the five major river drainages they historically inhabited in Montana, and to maintain genetic diversity and life history strategies represented by the remaining local populations.”

3. Name of Project

Introduction of Westslope Cutthroat Trout to Elkhorn Creek, Gallatin River Drainage

4. If Applicable:

Estimated Construction/Commencement Date: June/ July 2007

Estimated Completion Date: 2009 - 2011

Current Status of Project Design (% complete): 100%

5. Location Affected by Proposed Action (county, range and township)

Elkhorn Creek (T8S R4E), Gallatin Mountain Range, Gallatin County

6. Project Size: Estimate the number of acres that would be directly affected that are currently:

1. Developed/ residential – 0 acres
2. Industrial – 0 acres
3. Open space – 0 acres
4. Wetland/ riparian – 0 acres
5. Floodplain – 0 acres
6. Irrigated cropland – 0 acres
7. Dry cropland – 0 acres
8. Forestry – 0 acres
9. Rangeland – 0 acres
10. Other – genetically pure WCT would be introduced to 4.5 miles of stream

7. Map/site plan: See figure 1.

8. Listing of any other Local, State or Federal agency that has overlapping or additional jurisdiction.

The U.S. Forest Service (Gallatin National Forest) and the Montana Department of Fish, Wildlife and Parks (FWP; Gallatin Wildlife Management Area) manage lands within the Elkhorn Creek drainage (Figure 1 and Figure 2). The Forest Service and FWP are cosigners of a Memorandum of Understanding and Conservation Agreement (MOU; FWP 1999) that outlines the agreement between agencies regarding conservation and restoration of WCT in Montana. Conservation measures outlined in the MOU include the introduction or reintroduction of genetically pure WCT where necessary for their management.

(a) **Permits:** N/A

(b) **Funding:**

This project would be part of the larger WCT conservation program in FWP Region 3, and would be primarily implemented by FWP staff dedicated to such efforts. The WCT conservation program is funded through state, federal, and private dollars. As part of the Gallatin National Forest fisheries program, fisheries personnel from the Forest may participate in some aspects of the project. Anticipated resource demands are discussed on page 11.

(c) **Other Overlapping or Additional Jurisdictional Responsibilities:**

<u>Agency Name</u>	<u>Type of Responsibility</u>
US Forest Service, Gallatin National Forest	Management of federal lands within the Elkhorn Creek drainage
Montana Department of Fish, Wildlife & Parks	Management of state lands within the Elkhorn Creek drainage

9. Narrative summary of the proposed action or project including the benefits and purpose of the proposed action:

Background

Westslope cutthroat trout, Montana's state fish, has declined in abundance, distribution, and genetic diversity throughout its native range (Shepard et al. 2003). Reduced distribution of WCT in Montana is particularly evident in the Missouri River drainage where genetically pure populations are estimated to reside in about 5% of habitat they historically occupied. In the Gallatin River drainage, the location of the proposed effort, only two genetically pure populations are known to persist. In total, these populations consist of fewer than 1000 fish, and only occupy about 4.0 miles of stream, or less than 0.5% of their estimated historic range in the drainage.

Major factors contributing to the decline of WCT include competition with nonnative trout (brook, brown, and rainbow trout) that were first introduced to Montana in the 1890's, hybridization with rainbow and Yellowstone cutthroat trout, habitat changes, over-exploitation, and isolation to small headwater streams. Due to continued threats, most remaining WCT populations in the Missouri River drainage are considered to have a low likelihood of long-term persistence (100 years) unless conservation actions are implemented (Shepard et al. 1997).

Long-term conservation of WCT in upper Missouri River drainage will require both projects that preserve existing WCT populations in their native streams, and projects that establish new WCT populations in secure habitats where they face no threats from introduced nonnative trout. By using existing populations as a donor source for establishing new populations, in theory, these efforts will serve to create "genetic reserves" for populations that may disappear from their native habitat. This concept is particularly important in areas like the Gallatin River drainage where few populations and little genetic diversity remain.

Location and Summary of the Proposed Project

Elkhorn Creek is a second order stream (3 – 10 feet in width) that flows west from its headwaters (elevation: 8400 ft) in the Gallatin Mountain Range to its confluence with the Gallatin River (elevation: 6400 ft) near Big Sky, MT (Figure 1). The drainage contains about 6 miles of perennially flowing stream. A landslide of unknown age crosses and isolates the upper 4.5 miles of the stream (see Figure 1). Below this landslide, the stream flows underground for about 1 mile, then resurfaces at a much reduced flow near the confluence with the Gallatin River.

Extensive electrofishing surveys show that stream above the landslide is currently fishless. It is unknown if fish historically occupied this reach, then disappeared though a large scale disturbance like drought or fire; after which, the landslide and subsurface flow would have prevented recolonization of the stream. Size of the stream (flow, width and depth), length of the reach (4 miles), and high quality habitat indicate that the currently fishless reach of Elkhorn Creek could support a viable WCT population.

The proposed project is to establish a WCT population in upper Elkhorn Creek (above the landslide; Figure 1) by introducing fertilized eggs and or fish from one or more local WCT populations. For several reasons Elkhorn Creek is an exceptional location for this type of conservation effort. Foremost, Elkhorn Creek maintains high quality habitat that could potentially support a WCT population of up to 2,000 fish – a population of such size is currently nonexistent in the Gallatin River drainage, and very rare in the entire upper Missouri River drainage. Second, the stream is currently fishless, thereby providing an immediate opportunity to establish a new WCT population. A similar type

project in a stream currently occupied by nonnative fish would require multiple-year, expensive, and potentially controversial efforts to eradicate the nonnative fish using chemical or mechanical removal methods. Finally, the stream is isolated by an extensive natural barrier that would prevent newly introduced WCT from leaving the project area, and more importantly, invasion of nonnative trout. Extensive surveys of the Gallatin River drainage have indicated that other WCT conservation opportunities in the basin are restricted to streams with lower quality habitat, shorter stream reaches, or require removal of nonnative trout. For these reasons, Elkhorn Creek has been identified as the best current opportunity to expand the distribution of WCT in the Gallatin River drainage.

The project would involve introducing fertilized eggs or fish to Elkhorn Creek that are collected from native, and genetically pure WCT populations in the upper Missouri River drainage, and preferably, the Gallatin River drainage. By using a local donor source the new population may perpetuate locally adapted genetic characteristics not found elsewhere, and consequently, the population may have a greater chance for long-term persistence. The preferred donor source at this time is the West Fork of Wilson Creek near Gateway, MT, one of two remaining genetically pure WCT populations in the Gallatin River drainage. This population is considered “at risk” due to the nearby presence of whirling disease and nonnative trout, and fire related habitat degradation. The “replication” of this population is considered a WCT management priority in the drainage as its loss would be significant. The use of other upper Missouri River WCT populations could be necessary if unanticipated issues (e.g., presence of disease, genetics issues, or reduced population abundance) prevent the use of West Fork of Wilson as a donor stream.

Fish would be introduced to Elkhorn Creek over several years through on-site incubation of fertilized eggs, transfer of live fish from the donor population(s), or introduction of live fish produced from locally collected eggs that are reared in a hatchery. Each introduction method is considered to have its own unique benefits, and a combination of each could be used in Elkhorn Creek based on variables like changing health and abundance status of the donor population(s). Specific introduction methods are discussed in Appendix 1. Regardless of introduction method used, the principal goal of the project would be to establish a genetically sound WCT population using wild upper Missouri River stocks.

Purpose and Benefits of the Proposed Project

The primary purpose of the project is to help achieve the goal of ensuring the long-term, self-sustaining presence of WCT in the upper Missouri River by establishing a genetically pure WCT population in the upper reaches of Elkhorn Creek. With the successful establishment of a population using the methods identified above, the benefits of the proposed effort would include:

- Increasing the number of genetically pure WCT populations in the Gallatin River drainage from 2 to 3 populations.
- Doubling the distribution of genetically pure WCT populations in the Gallatin River drainage from 4 to 8 miles.
- Preserving the genetic legacy of relatively rare upper Missouri River WCT.

10. List of agencies consulted during preparation of the EA:

- Montana Fish, Wildlife & Parks, Townsend, Bozeman, Great Falls, Helena and Missoula
- U.S.D.A. Forest Service, Gallatin National Forest, Bozeman

PART II. ENVIRONMENTAL REVIEW

1. Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.

A. PHYSICAL ENVIRONMENT

1. <u>LAND RESOURCES</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. **Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other:						

2. <u>AIR</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a)		X				
f. Other:						

3. WATER Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ****For P-R/D-J, will the project affect a designated floodplain? (Also see 3c)		X				
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)		X				
n. Other:						

4. <u>VEGETATION</u>	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
Will the proposed action result in:						
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				
g. Other:						

** 5. <u>FISH/WILDLIFE</u>	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		No	5b
c. Changes in the diversity or abundance of nongame species?			X		No	5c
d. Introduction of new species into an area?			X		No	5d, 5c, 5b
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				5c
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. ****For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)			X		No	5b, 5d
j. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

See following page for comments.

Comment 5b. The proposed project would increase the abundance and range of pure WCT, a rare and unique resource with limited distribution in the upper Missouri River drainage, and particularly the Gallatin River drainage. This is a minor impact because no displacement of other game fish is expected, and the distribution of a game fish (WCT) would increase. In the long-term, an overall increase in angling opportunities is expected with this project. Westslope cutthroat trout are currently protected by catch-and-release regulations in streams in the Gallatin River drainage, but restoration efforts like the proposed action are intended to increase overall WCT abundance to allow future harvest of the species in this and other streams.

Comment 5c: The proposed action will introduce WCT into a stream that is currently barren of fish. A potential impact of any fish introduction into a fishless stream is on resident aquatic invertebrates and amphibians.

Because WCT are insectivores their introduction to Elkhorn Creek could cause changes in the abundance of some aquatic macroinvertebrate taxa. To determine if WCT would impact any unusual, sensitive, threatened or endangered species, macroinvertebrate samples were collected from Elkhorn Creek in 2006 (Scott Barndt, Gallatin National Forest) and analyzed by David Stagliano, an Aquatic Ecologist with the Montana Natural Heritage Program. Of the 58 total macroinvertebrate taxa identified in the collections, three are considered rare and sensitive (*Drunella spinifera*, a mayfly, and *Cryptochia furcata* and *Rhyacophila verrula*, both caddisflies), although none are threatened or species of special concern. Additionally, these three species do co-exist with trout in other streams, and the conclusion of the assessment was that "...no detrimental effects would be incurred by the macroinvertebrate populations with an introduced native trout population" (Stagliano 2006). The full report can be obtained by contacting Lee Nelson, FWP, 406-495-3866.

The introduction of WCT into fishless streams in the Gallatin Mountain Range is also unlikely to impact native amphibians. Amphibians sensitive to fish introductions, like the Columbia spotted frog, reproduce in lakes or ponds and would not be affected by the proposed WCT introduction. The only stream breeding species common to the area, the western toad, has co-evolved and co-exists elsewhere with WCT. Elkhorn Creek is also outside the known range of other stream breeding species, like the rocky mountain tailed frog – none of which were observed during electrofishing and visual surveys of the stream. Finally, surveys by GNF personnel indicate off-channel amphibian breeding and rearing habitats are present and common in the Elkhorn drainage, and these habitats would not be impacted by the proposed introduction of WCT into Elkhorn Creek.

Comment 5d: This project would introduce WCT to a stream that is currently barren of fish. While WCT are native to the Gallatin River drainage, it is unknown if they historically occupied the upper reaches of Elkhorn Creek due to a current natural barrier. Also see comment 5c.

A potential impact of transferring fish between streams and using a hatchery for egg rearing is the introduction of fish pathogens to Elkhorn Creek. To address this concern, fish samples will be collected from all WCT donor populations prior to introductions. These disease samples will be tested for the presence of bacterial kidney disease, enteric redmouth, whirling disease, furunculosis, infectious hematopoietic necrosis virus, infectious pancreatic necrosis virus, and viral hemorrhagic septicemia. Donor fish populations that test positive for significant pathogens would not be used for the introduction effort. Finally, the potential of disease being transferred from hatchery to the wild will be reduced by isolating eggs and/or fry in the hatchery, and by treating eggs with formalin and iodine (external disinfectants) during incubation and prior to placement in on-site, streamside incubators.

B. HUMAN ENVIRONMENT

6. <u>NOISE/ELECTRICAL EFFECTS</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

7. <u>LAND USE</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?			X		No	7b.
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other:						

Comment 7b: Elkhorn Creek is within a Wilderness Study Area (WSA), and this project could potentially impact 'wilderness character'. In WSAs, wilderness character is measured by four components: 1) natural integrity (long-term ecological processes intact and functioning); 2) apparent naturalness (visitor's perception of human impacts to an area); 3) opportunities for primitive recreation experience; and 4) opportunities for solitude. This project potentially impacts natural integrity, because the introduction of fish into a fishless stream will have some impact upon ecological processes. In this instance, impacts are expected to be minor for several reasons: 1) amphibian populations are not expected to be impacted; and 2) macroinvertebrate communities within Elkhorn Creek are those which co-evolved with WCT, which are sympatric elsewhere, and which are expected to successfully coexist in Elkhorn Creek if WCT become successfully established. Furthermore, establishing WCT in a portion of this WSA restores a portion of the historic character of the larger WSA which has been lost over time; WCT historically were the only trout species native to the WSA, and currently are not present anywhere else within the WSA. Apparent naturalness of the WSA may be temporarily impacted if streamside incubators are used to stock WCT into Elkhorn Creek, but it is unlikely that these structures will be visible to any visitor to the drainage, because they will be temporary in nature and placed within the riparian vegetation along the stream. Implementation of this project could provide additional opportunities for a primitive recreation experience if anglers choose to fish the stream; conversely, additional anglers using the stream could reduce opportunities for solitude to a degree. In these latter cases, given the remote nature of the stream and its small size, it is unlikely that the stream will see significant angling pressure, and therefore little change to solitude as well. In summary, minor impacts to wilderness character are anticipated as a result of this project, but these impacts include both positive and negative attributes. Finally, opportunities for a cutthroat conservation project of this value are currently not available outside the WSA.

Comment 7b continued. Naturally fishless reaches are relatively common in the headwaters of many mountain streams. Most are fishless because they do not maintain the habitat conditions needed for persistence of a fish population; for example, stream temperatures that are too cold for adequate reproduction, or high gradients that do not provide suitable over-wintering habitats. Elkhorn Creek is apparently fishless because the natural barrier has prevented colonization from the Gallatin River. This fishless stream is a rare and unique resource in that it maintains habitat suitable for fish. The ecological processes of a fishless stream reach would change with the introduction of WCT to Elkhorn Creek; however, these processes would be maintained in other mountain stream reaches of the Upper Missouri River drainage that are fishless for a various reasons.

8. <u>RISK/HEALTH HAZARDS</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		X				
e. Other:						

9. <u>COMMUNITY IMPACT</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

10. <u>PUBLIC SERVICES/TAXES/UTILITIES</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. **Define projected revenue sources			X			10e
f. **Define projected maintenance costs.			X			10f
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

Comment 10e. This project would be part of the larger WCT conservation program in FWP Region 3, and would be primarily implemented by FWP staff dedicated to such efforts. The WCT conservation program is funded through FWP, federal (Forest Service and Bureau of Land Management), and private (Montana Trout Unlimited) dollars. As part of the Gallatin National Forest fisheries program, fisheries personnel from the Forest may participate in some aspects of the project. Based on similar introduction efforts in the Elkhorn Mountains near Helena, MT, labor demands would be 10 to 30 man-days per year until self-sustaining populations are established (2 – 5 years).

Comment 10f. Maintenance costs would be minimal with successful establishment of a self-sustaining WCT population after the 2 – 5 year period of introductions.

** 11. <u>AESTHETICS/RECREATION</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)		X				
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
e. Other:						

12. <u>CULTURAL/HISTORICAL RESOURCES</u> Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

SIGNIFICANCE CRITERIA

13. <u>SUMMARY EVALUATION OF SIGNIFICANCE</u> Will the proposed action, considered as a whole:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. ****For P-R/D-J, list any federal or state permits required.						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Water Resources (Attach additional pages of narrative if needed):

PART II. ENVIRONMENTAL REVIEW, CONTINUED

2. Description and analysis of reasonable alternatives (including the no action alternative) to the proposed action whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternatives would be implemented:

- 1) No Action Alternative

The predicted consequences of the “No Action” alternative are:

- About 4 miles of habitat suitable for WCT conservation would remain fishless.
- Relatively rare upper Missouri River WCT would not be preserved in the highest quality and currently available habitat in the Gallatin River drainage.
- Conservation goals for WCT in the Upper Missouri River drainage would be more difficult to achieve.
- No costs associated with the introduction efforts.

- 2) Preferred Alternative: Introduction of pure WCT to Elkhorn Creek (proposed action)

The predicted consequences of the Preferred Alternative were detailed and discussed in Part I and Part II.

3. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

None

PART III. NARRATIVE EVALUATION AND COMMENT

Addressed in Part I and Part II.

PART IV. EA CONCLUSION SECTION

1. Based on the significance criteria evaluated in this EA, is an EIS required (YES/NO)? If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.

No. An EIS is not required under the Montana Environmental Policy Act (MEPA) because the project lacks significant impacts to the physical or human environment. Therefore, the impacts are appropriately addressed through an Environmental Assessment. The primary impact associated with the project is increased abundance and distribution of WCT in the Gallatin River drainage, which is the intended consequence of the action.

2. Describe the level of public involvement for this project if any and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?

The public will be notified through local newspapers and through contact with local sports groups and others who have previously indicated interest in similar projects. This EA will also be published on the Montana Fish, Wildlife & Parks web page (<http://fwp.mt.gov/default.html>). Public comments can be given at the FWP web page, or in writing to: Lee Nelson, Montana Fish, Wildlife & Parks, 415 South Front Street, Townsend, MT 59644, or email: leenelson@mt.gov. Comments on the EA will be accepted until 5:00 pm, June 11, 2007. This level of public involvement is believed adequate for the proposed project, as similar and recent efforts in the Elkhorn Mountains near Helena, MT, have produced no significant issues or controversy. If significant concerns are raised concerning this EA, a public open house to discuss the issues will be scheduled.

3. Duration of comment period.

The public comment period for this proposal is from May 10, 2007, to June 11, 2007. Written comment can be mailed to:

Lee Nelson
Montana Fish, Wildlife & Parks
415 South Front Street
Townsend, MT 59644
E-mail: leenelson@mt.gov

4. Name, title, address and phone number of the person(s) responsible for preparing the EA:

Lee Nelson
Fisheries Biologist
Montana Fish, Wildlife & Parks
415 South Front Street
Townsend, MT 59644
Phone: 406-495-3866
E-mail: leenelson@mt.gov

References

- FWP. 1999. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana. Montana Fish, Wildlife and Parks, Helena, Montana.

- Shepard, B. B., B. Sanborn, L. Ulmer and D.C. Lee. 1997. Status and risk of extinction for westslope cutthroat trout in the upper Missouri River Basin. *North American Journal of Fisheries Management* 17:1158-1172.
- Shepard, B. B., B.E. May and W. Urie. 2003. Status of Westslope Cutthroat Trout in the United States: 2002. Montana Fish, Wildlife and Parks for the Westslope Cutthroat Trout Interagency Conservation Team, Helena, Montana.
- Stagliano, D. M. 2006. Aquatic Macroinvertebrate Assessment and SOC Species of Elkhorn Creek, Gallatin Co., MT. Montana Natural Heritage Program, Helena.

Appendix 1. Proposed WCT Introduction Methodology

Three methods are being considered for introduction of WCT into Elkhorn Creek. These include the introduction of fertilized eggs, the direct transfer of live WCT from a wild donor source, and the introduction of live fish produced from eggs collected in the wild and hatched in a hatchery. All three introduction strategies are being considered because each has its unique benefits, and variable weather conditions, donor populations status (e.g., health and abundance), and survival of introduced egg/ fish may govern changes to introduction procedures.

Method 1. Introduction of fertilized eggs. The introduction of fertilized eggs has been used to establish several WCT populations in the Elkhorn Mountains near Helena, MT. The benefits of using fertilized eggs are that a large number of fish (eggs) can be introduced during a short period of time, known genetic diversity, a lower chance of spreading disease, and potentially, eggs that hatch in a stream are potentially more “imprinted” to that stream than a fish that was hatched elsewhere. Disadvantages of using fertilized eggs include high labor costs involved with collecting adult fish for spawning and care of fertilized eggs, and introducing enough individuals over a short period of time to create a strong genetic base for the new population. Using only eggs, we anticipate it would take 3 to 5 years to introduce enough gametes to establish a genetically sound population in the Elkhorn Creek.

Timeframe and specific strategies for egg introductions:

1. *Collect eggs from donor WCT populations.* Gametes will be collected during June and July 2007, and successive years, from female and male WCT in donor streams. Fish will be captured by electrofishing or trapping at known spawning locations. Prior to being returned live to the stream, donor fish will be marked with an adipose fin-clip so they are not used as donors in following years. To lessen the chance that egg-takes will adversely affect the donor populations, only 5 – 15 females will be collected each year from a donor population for egg-take purposes.
2. *Egg incubation – Sun Ranch Fish Hatchery.* Fertilized eggs will be immediately moved to the Sun Ranch Fish Hatchery (near Ennis, MT) for about two weeks of incubation. This private hatchery was built in 2002 specifically for WCT restoration projects. The use of the hatchery is an attempt to reduce egg mortality that may occur with long-term, on-site stream

incubation. At the hatchery, eggs from each mating will be kept separate until the viability of the eggs is known. This method will help us determine the relative contribution of each female and male to the new population. Prior to bringing eggs back into the wild they will be disinfected with formalin and iodine, which are external disinfectants to minimize possible disease transfer. Eggs will be incubated in the hatchery until about 1 week pre-hatch.

3. *On-site egg incubation/fry rearing.* One week pre-hatch, eggs will be moved to streamside incubators in Elkhorn Creek. Streamside incubators consist of a 5-gallon plastic bucket, plastic pipes to provide water flow to the bucket, and artificial substrate to provide shelter for eggs and fry. Incubators will be checked 1 or 2 times each week to monitor water flow, remove dead eggs, and to monitor egg and fry development. Fry will disperse voluntarily from the incubators after about 2 to 4 weeks of additional development.

Method 2. Transfer of live fish. The introduction of live fish has been successful at establishing WCT populations in fishless reaches of Muskrat and Whitehorse creeks in the Elkhorn Mountains (near Helena, MT), and several streams in FWP R-4. Benefits of transferring live fish include establishing a self-sustaining population over a relatively short period of time, and reduced labor costs as compared to collection and introduction of eggs. Disadvantages of using live fish include potential negative impacts on the donor population if a significant percentage of the population is moved, establishing a population comprised of a high percentage of siblings, less likelihood of fish “imprinting” on the new stream, and the greater potential of transferring disease (see page 8 for discussion on disease transfer). Depending on the number of donor sources used and how well fish survive transfer, it could take 2 to 4 years of introducing live fish to establish a genetically viable WCT population in Elkhorn Creek.

Timeframe and specific strategies for live fish introductions: sub-adult WCT would be collected from the donor population(s) by trapping and/or electrofishing summer to late fall. Efforts would be made to capture fish throughout the distribution of WCT in each donor stream – this should reduce the incidence of transferring closely related fish. Total fish moved each year would be variable and based on annual abundance of young fish from each donor population, and total number of donor populations utilized. Likely, 30 to 300 fish would be moved from each donor population each year for 2 to 4 years. Collected fish would be transported to Elkhorn Creek in coolers with an ample oxygen supply, then simply released to the stream after a short (0.5 hr) adjustment period to Elkhorn Creek water.

Method 3. Introduction of hatchery reared wild WCT. The final introduction method being considered is a combination of collecting wild WCT eggs and introduction of live fish produced in a hatchery from those eggs. This method has not been used in upper Missouri River drainage as a WCT conservation tool, however, it is a common fisheries management practice used with a variety of trout. The benefits of using this method include potential introduction of a large number of individuals, known genetic diversity, less labor involved than with operation of incubators, potentially higher survival rate of introduced fish vs. eggs or transferred wild fish, potentially a reduced risk of transferring disease than moving wild fish, and less impact on the donor population(s) than collecting live fish. Disadvantages would include higher hatchery cost for hatching and rearing eggs, and potentially, less imprinting of live fish to their new habitat.

Timeframe and specific strategies for introduction of hatchery reared wild WCT: the initial timeframe and methods of wild egg collection would be the same as described in Method 1; however, a portion or all of the eggs would be allowed to hatch in the hatchery. Fry would be reared in the hatchery until they reach a sufficient size (about 3 inches; September - November) to allow transport to Elkhorn Creek using techniques described in Method 2.

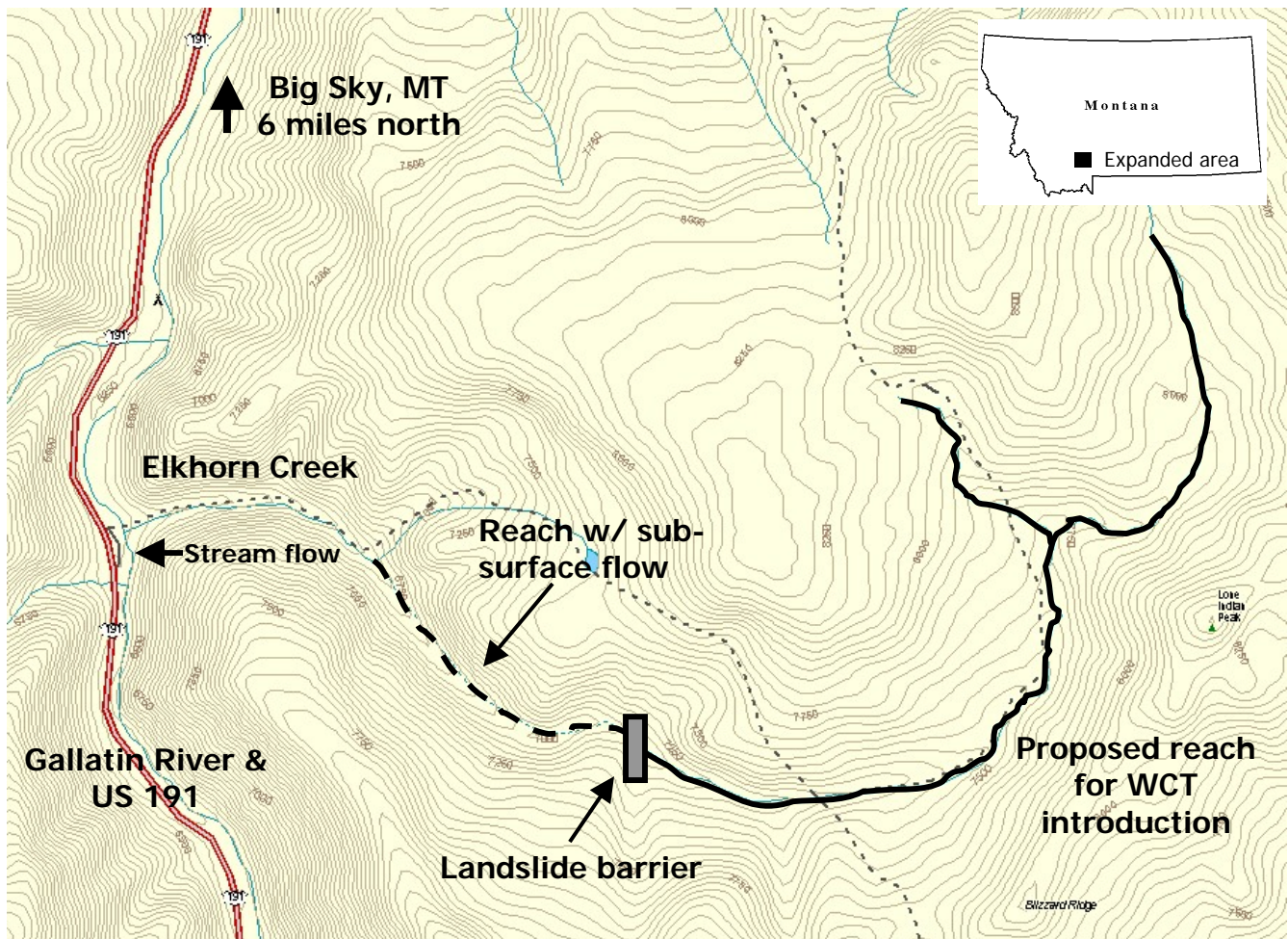


Figure 1. Map of area proposed for westslope cutthroat trout introduction in Elkhorn Creek, near Big Sky, MT. Map scale: one inch equals 0.7 miles.

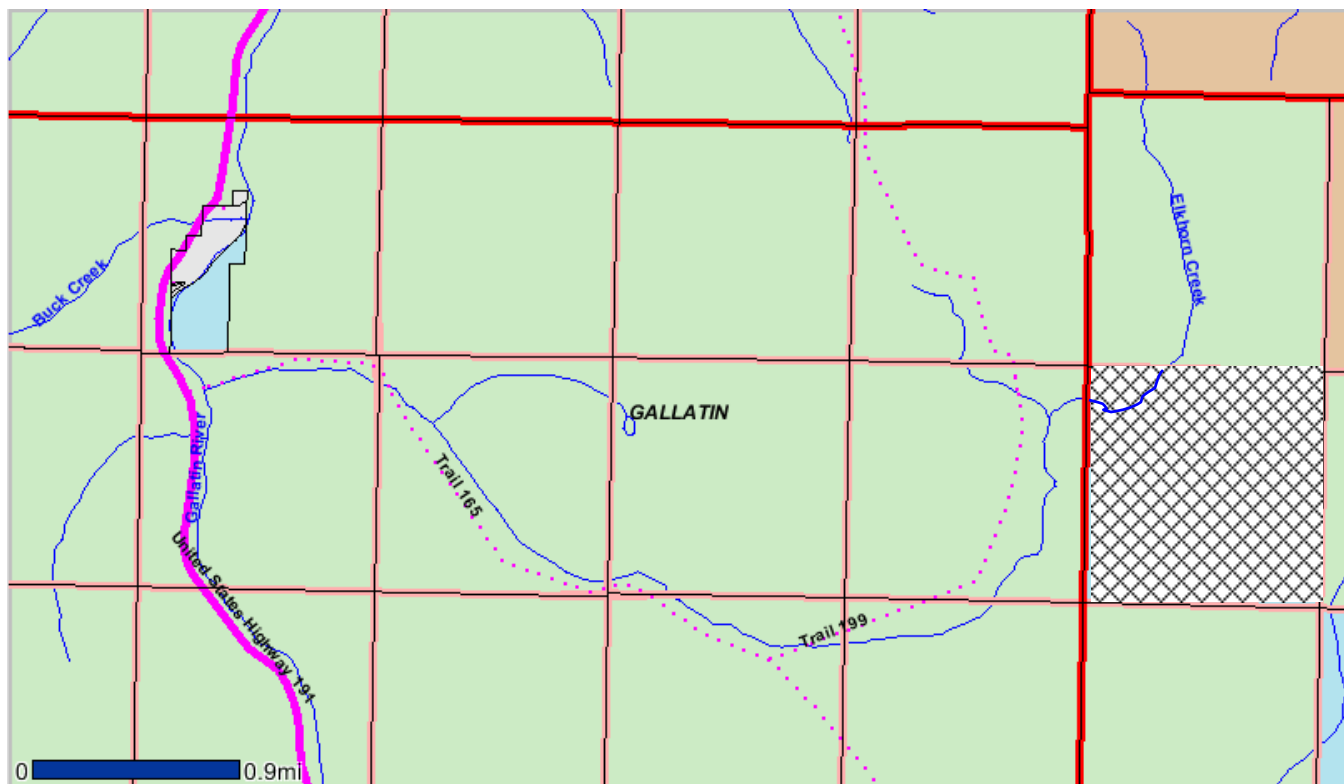


Figure 2. Map displaying the distribution of FWP managed lands (hatched square, 1 section) within the Elkhorn Creek drainage. Remaining lands fall within the Gallatin National Forest.